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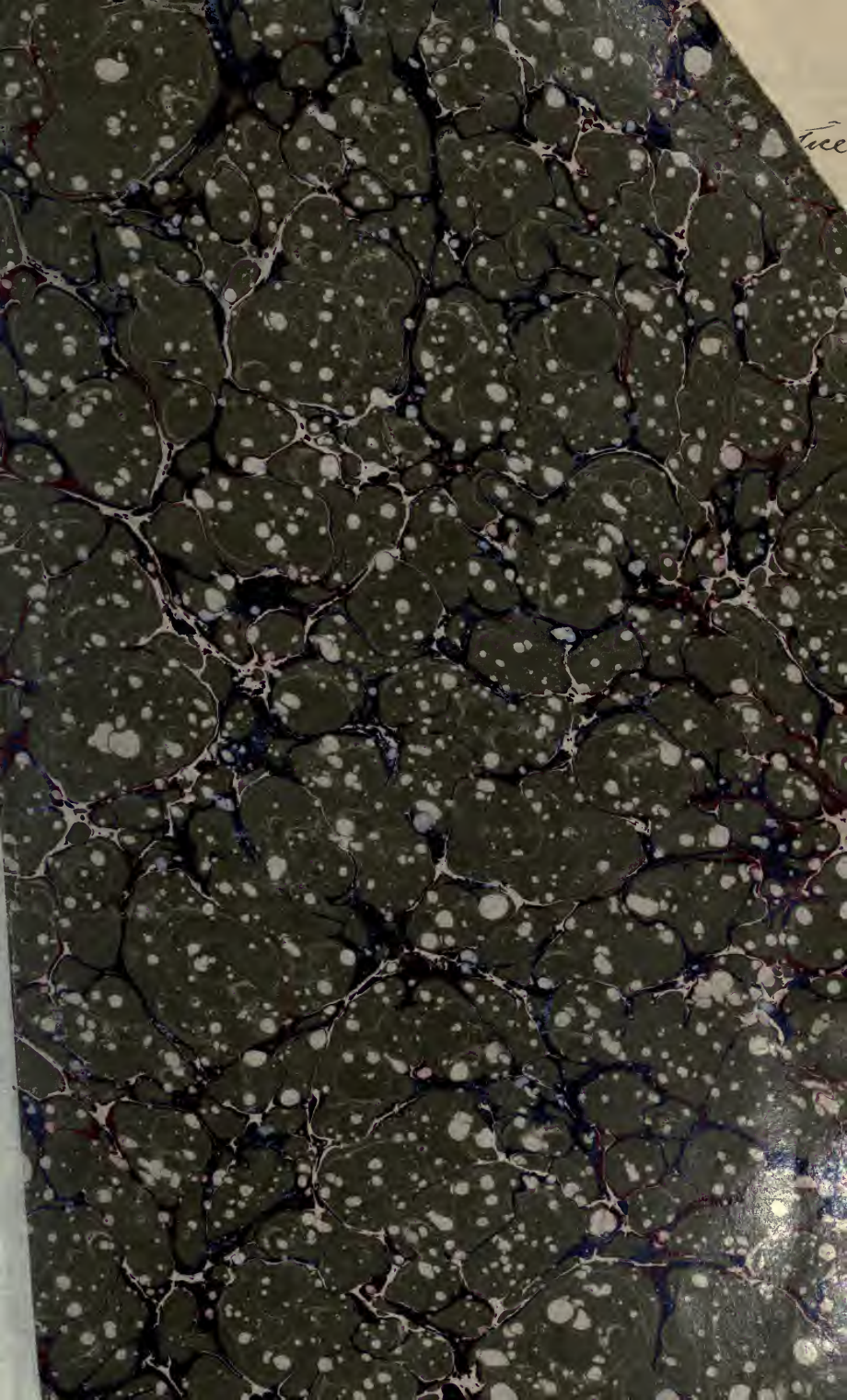
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BIOGRAPHICAL NOTICE OF CHARLES A. ASHBURNER.

BY J. P. LESLEY, PHILADELPHIA, PA.

(Washington Meeting, February, 1890.)

THE old do not love to see the young pass away from the light of the sun before them. Fathers would fain keep their sons by their side to the end of life ; but the old Greeks, who loved the old gods, were wont to moderate their grief with the sweet superstition that only those whom their gods especially loved died early. The Christian church found consolation in that superstition applied in a new form to its new sorrows, and paid its most enthusiastic devotion to the memories of its young and beautiful martyrs. The natural science of our century is robbing us fast of this and all other superstitions, sweet as well as bitter, and leaving us for consolation to the teaching—colder, yet kinder—of personal fortitude and that optimism which intelligently translates the Cosmos of Humboldt back into its old name of the Harmonia of Pythagoras. The Homeric Kataclothés, the three fates, are dead and gone for us, with that old world which comprehended none of the laws of cause and effect, and sorrowed for those who were cut off from the land of the living without hope of more than a shadowy existence beyond the river of death. All the more the ancients cherished the memory of their dead and lavished their choicest art upon their monuments. We moderns have lost the monumental arts, but we better keep the monuments which our dead leave behind them. No one of us who has done good work can fail to be remembered ; and in an Institute like this, which keeps the press at work, an immortality in the memory of men is more possible, more certain, for every one of its members than the greatest heroes of antiquity could anticipate for themselves. In old apocalyptic times the works of men followed them through death to the throne of God to be their advocates in judgment, but in these modern times our works remain this side the grave, to follow the name of the departed one as it takes its course along the history of his peculiar art or science advancing slowly to perfection. We write the epitaph, not upon the mouldering stone of a tomb, but on the pages

of a book which shall stand in all the libraries of Christendom. Let it be written lovingly.

What, then, are the monuments which our Charles A. Ashburner has left behind him? He was your fellow-member, and you grieve for his sudden loss; he was one of my children, and I grieve still more. To me his death is one of the irreparable losses. He was one of my college boys. I taught him the elements and principles of geology in the Towne School of the University of Pennsylvania from 1872 to 1875. He was one of the quickest of learners, and took to physical science like a duck to water. He had a genuine genius for appreciating form and structure, and was one of the few who, at the outset of a scientific career, comprehend the uses of accuracy. Many never learn them; he was accurate by nature. Everything of the nature of true proportion appealed to him with the certainty of a response in the shape of some additional striving after absolute precision of statement or presentment. He was a born artist, seeing what he drew and drawing what he saw. The love of exact scientific truthfulness, however, in his case never hardened, as it does in so many other cases, into a pedantic formalism. He was full of inventiveness. His imagination was fertile in new inventions for discovering and portraying the exact proportions and relations of things—the objects of inquiry. He was a zealot in science. He might have said to any one, or to his own soul, with safety, “The zeal for exact truth has eaten me up.” In fact, we owe this zeal the heavy grudge that in the end—nay, not half-way to the proper end—it killed him. He never spared himself, or any price, to become perfectly sure of facts. For many of his facts he had to pay a high price; but the actual facts he would have. No half-facts for him. I have not encountered a more real and typical man of science—born for true science. Consequently he was a discoverer, a natural leader of men in exploration.

His first work was topographical. I commissioned him and his classmate, Charles E. Billin, in 1885, to aid Mr. John H. Dewees, Assistant Geologist in charge of the survey of the fossil ore-belt of the Juniata Valley. They soon learned to carry on their geological as well as their topographical work independently of Mr. Dewees. A very perfect contour-line map of the south flank of Jack’s Mountain, and of the small valleys and ridges in front of it, was made by them in common, and is one of the most satisfactory products of the State survey.

Mr. Ashburner wrote the report on the Aughwick Valley and

East Broad Top Coal-basin, published, with Mr. Dewees's report on the fossil-ore mines, as "Report F," in 1878. His discussion of the Three Springs fault showed his extraordinary geological ability, and was a plain prediction of his future eminence. But the many precisely-constructed sections across that belt of the State, published in Report F, proved that he combined the qualities of geologist and artist in the highest degree.

In 1876 I commissioned Mr. Ashburner to survey one of the most important districts of the State, and one of the most difficult—the counties of McKean, Elk, Cameron and Forest, containing the Bradford oil-district, then becoming famous for its productiveness. His survey of McKean was commenced in July of that year, and lasted two years; but his report on it (R) was not published until 1880. The district being traversed by gentle anticlinal waves, which but slightly modify the essential horizontality of the Lower Carboniferous and Devonian measures, and being occupied largely at the surface by the Conglomerate No. XII., which had not then been subdivided properly in northern Pennsylvania, although its subdivisions had been made out by I. C. White in the western counties, Ashburner instinctively felt that his success would depend on a good topographical map as the first step of the survey; and he made one of the best, contouring it with the eye of an artist who knew the geological significance of every feature of every curve. When a model in relief, on an equal vertical and horizontal scale, was made from this map, and the colored belts of the outcrops were laid upon it, no more perfect exhibition of the geology of an extensive area could be imagined. But his study of the underground by surface-sections and well-borings was quite as excellent, and quite as well expressed to view. The generalizations which he deduced from it bore the most important fruit, fixed the limits of the oil, and placed the calculation of boring-depth in that district on a sure scientific basis, one of his most striking discoveries being the rapid increase in thickness southeastward of formation No. X., from 250 feet to 750 feet, which explained the failure of many borings to reach the deeper oil-horizon in Elk and Cameron counties. In 1878 Mr. Arthur W. Sheaffer was commissioned to assist him in completing the survey of the four counties; and the second volume (R R), relating to Elk, Cameron and Forest, was published in 1885, having been long delayed by his work in eastern Pennsylvania.

When, in 1880, the time came for organizing the survey of the anthracite-region as a special and most important part of the survey

of the State, I selected, without hesitation, Mr. Ashburner to plan, organize and execute it. I have no intention of describing this *chef d'œuvre* of geology as an applied science, now famous at home and abroad; for its numerous sheets of mine-maps, columnar-sections and cross-sections are probably in the hands of most of the members of the Institute. I wish only to lay the fame of this splendid achievement as a green wreath on the tomb of our fellow-member. He knew exactly what was to be done and did it. He selected his assistants, taught them and worked with them, inspired them with his own zeal, and lifted their work to the standard level of his own, and kept it there. He encountered indescribable obstacles of social, mercantile and professional kinds, and overcame them with admirable tact and good judgment. He entirely conquered the rooted prejudice of practical miners and local engineers against scientific geologists, until it became evident to all that the State survey knew what it was about, was doing a special and specific business, and not only could teach the oldest and most intelligent operators something they did not know, and unaided could not know, but would place upon their office-tables what they would soon come to consulting every day, and would not part with at any price. Above all, he was wise enough to inspire everybody in the anthracite region with entire confidence in his honesty, in his truthfulness, in the exact meaning of what he promised to do and not to do, and in his certain performance of such promises. His sense of private and professional honor was so keen and so subtle that it led him triumphantly through a perfect labyrinth of suspicion, fear and dislike, engendered against him and his survey by contending colliery-interests and competing official interests. He insured accuracy for his own work, and confidence in it at the same time, by the original device of a submission of every proof received from the artists of every sheet in its stages of publication, to the superintendents and engineers of the colliery companies, to be criticized and corrected as they pleased. But these returned proofs were then subjected to re-examination by him and his assistants, to test the value of such corrections, over which conferences were held, and debates, until they were accepted or rejected. In many cases the companies themselves saw the necessity for new and, at first, strange work, and ordered it done by their own engineers. In a word, not to be tedious, the survey produced a change of professional sentiment in the whole region, of a nature which the members of this Institute can well understand without my describing it. This was Ashburner's

doing. Of course his whole corps of assistants ably supported and seconded him; fell into his ways; helped to make his system successful; became themselves able geologists; and are now among the most trustworthy and reputable. His will was strong, but his heart was warm; and, while he permitted no disobedience of orders, I never knew a man more generous and faithful to those above and those below him. Such a man will make enemies; but he never showed the least rancor towards them. I have said he was a typical man of science; I can safely add that he was a true Christian gentleman, with a heart overflowing with affection to his fellow-men. Ambitious? yes, very ambitious, but only of power which he never abused; wealth which was not for himself; fame, but of the noblest kind.

Mr. Ashburner conducted the anthracite survey from 1880 to 1887, and was succeeded by his accomplished assistant, Mr Frank Hill, who completed the survey June 1, 1889; when by Act of Assembly the work of the Geological Survey of Pennsylvania ceased and the whole corps was disbanded. Mr. Ashburner's first work was a thorough survey of the Panther Creek, or eastern division of the southern anthracite field, between Mauch Chunk and Tamaqua, his report on which (AA) was published in 1883. In subsequent years he had separate field parties, working simultaneously, in the Eastern middle, Western middle, and Northern fields, with offices at Pottsville, Hazleton, and Wilkesbarre, his headquarters being at Philadelphia.

In the fall of 1886 he resigned his commission (with the understanding, however, that he would give half his time still until the following summer) to accept business relations, as a scientific expert, with Mr. Westinghouse at Pittsburgh. Since then, and up to the time of his death, he travelled widely in the United States and Canada to examine especially new oil- and gas-fields, and latterly proposed plants for mining the precious metals. It was on his second return from Arizona in December last, worn out with exertion, exposure and the responsibilities of his office, that he fell ill and died at Pittsburgh, leaving an amiable wife and two young children and innumerable friends to mourn his loss.

He was a member of the American Philosophical Society from 1880, in the *Proceedings* of which will be found the following papers, which he read at the meetings of the Society between 1881 and 1889:

On Kintz's Fire-Damp Indicator, xxi., p. 283.

Notes on the Natural Bridge of Virginia, xxi., p. 699.

Remarks on the Recent Publications of the Second Geological Survey of Pennsylvania, xxii., p. 86.

Mr. Ashburner joined the American Institute of Mining Engineers in 1875, served as Manager in 1885, 1886 and 1887, and contributed to the *Transactions* the following papers :

	<i>Transactions.</i>
1. The Bradford Oil-District of Pennsylvania,	vii., 316
2. The Brazos Coal-Field, Texas,	ix., 495
3. New Method of Mapping the Anthracite Coal-Fields of Pennsylvania,	ix., 506
4. The Flannery Boiler-Setting for the Prevention of Smoke,	x., 212
5. The Anthracite Coal-Beds of Pennsylvania,	xi., 20
6. The Product and Exhaustion of the Oil-Regions of Pennsylvania and New York,	xiv., 419
7. The Geology of Natural Gas,	xiv., 428
8. The Classification and Constitution of Pennsylvania Anthracites,	xiv., 706
9. The Geological Distribution of Natural Gas in the United States,	xv., 505
10. The Geologic Relations of the Nanticoke Disaster,	xv., 629
11. Coal-Production in Utah,	xvi., 356
12. Petroleum and Natural Gas in New York State,	xvi., 906
13. The Development and Statistics of the Alabama Coal-Fields for 1887,	xvii., 206
14. The Geology of Buffalo as Related to Natural-Gas Explorations along the Niagara River,	xvii., 398
15. Statistics of Coal-Mining and of Miners' Wages in the United States for 1888 (in press),	xviii.,
16. Natural-Gas Explorations on the Ontario Peninsula (in press),	xviii.,

He also read at the Ottawa meeting, in October last, a biographical notice of Capt. W. R. Jones, of Pittsburgh, whose recent and distressing death by accident we were all at that time mourning. The manuscript of his notice of Capt. Jones he retained for final perfecting. It must now be finished by another hand, and the same last service must be done for him who undertook it for his friend.

